

ABSTRACT

A temperature-compensated fiber grating package which provides a temperature dependant stress on a fiber Bragg grating to substantially compensate for temperature dependant variations of the Bragg wavelength. The package includes a base, a fiber grating bonded to the base, and a strut. The base is formed from a high thermal expansion material, and includes first and second spaced arms separated by a base portion. The strut is constructed from a low thermal expansion material and is disposed between the first and second arms. The ends of the strut engage the interior surfaces of the arms to form left and right fulcrum points. The fiber grating is secured between the first and second arms. As temperature increases, the high thermal expansion material of the arms expands at a greater rate than the low thermal expansion material of the strut. The top portion of at least one of the arms thus pivots inward about a fulcrum point to place the temperature-dependant negative strain on the grating. The strain rate may be adjusted by appropriate positioning of the fulcrum points. According to another aspect of the invention a hinge may be provided adjacent one of the arms to substantially restrict flexing to that arm, thereby allowing adjustment of the compensating strain rate as well as an initial bias strain. According to another aspect of the invention, compensation for second order Bragg wavelength variations may be achieved by providing one of the arms with an inwardly extending angular top portion. Methods of making a temperature-compensated grating package consistent with the invention are also disclosed.